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The importance of applying basic scientific principles to test hypotheses applies just as much to forensic medicine as it does to other branches of medicine. This is demonstrated in a case report that describes a young man who was out with friends celebrating his 18th birthday when he died as a result of exsanguination from a completely severed left external carotid artery caused when a beer glass was thrown at him (*For Sci Int* 2008; 179: e19–23). The lethal injuries on the left side of the neck presented as deep, sharp-edged soft tissue lacerations resembling a stab wound. The investigators were not sure that the injuries could have been caused by throwing a beer glass and so set up a reconstruction using a plastic skull and a neck-shoulder model made of glycerine soap. The results of this experiment suggested that an undamaged beer glass thrown at the deceased could not have caused the fatal injuries because of the way the glass splinters on impact. It seemed that the beer glass must have been damaged prior to being thrown and that its sharp edges perforated the skin on hitting the neck.

It is commonly believed by anthropologists that the shape and characteristics of the human external ear are widely different and may be so distinguishable that it is possible to differentiate between the ears of all individuals. A study amongst 700 male and female volunteers confirms that every single ear is unique (including the left and right ear of each individual), thus providing further support for the use of human external ear patterns to establish personal identification (*For Sci Int* 2008; 178: 112–8).

Few victims can be more dramatic than pregnant patients who have been shot, particularly if the gravid uterus gets in the way of the bullet. Sadly, reports of gunshot wounds to pregnant women are becoming more common. One such case report (*J Emerg Med* 2008; 35: 43–5) describes a 23-year-old woman who was 37-weeks pregnant when she sustained a gunshot wound to the abdomen. A 1.5 cm entry wound was noted in the right lower quadrant of the abdomen with no exit wound. An abdominal X-ray showed the bullet located inside the uterine cavity, below the foetal head. Active foetal movements were noted and the foetal heart rate was normal at 144 beats/min. Treatment with antibiotics was commenced and the patient went into spontaneous labour 9 h after

admission, delivering a healthy male infant. Examination of the baby revealed a 2.0 cm superficial skin wound on the left scapular region and a 1.5 cm superficial laceration on the left shoulder. Sadly not all foetuses are as lucky. When pregnant women are shot the foetus usually has a worse prognosis than the mother, with a perinatal mortality rate of 41–71%.

There is little research specifically examining strangulation in the context of intimate partner violence so a case control study that set out to determine whether non-fatal strangulation by an intimate partner was a risk factor for subsequent homicide provides important new information (*J Emerg Med* 2008; 35: 329–35). Prior non-fatal strangulation was associated with a greater than seven-fold increased risk (OR 7.48, 95% CI 4.53–12.35) of becoming a completed homicide. These results show non-fatal strangulation as an important risk factor for homicide of women, underscoring the need to screen for non-fatal strangulation when assessing women who are victims of domestic violence.

Much has been written on the subject of drug facilitated sexual assault (DFSA), both in peer-reviewed scientific articles and in the media – with certain substances obtaining dubious reputations as ‘date rape’ drugs. The results derived from forensic toxicology reports of over 1800 cases of alleged sexual assault in Sweden confirm and extend previous findings from other countries, namely that ethanol is the predominant psychoactive substance in blood and/or urine samples (*For Sci Int* 2008; 181: 40–6). Overall, 1247 (69%) of complainants tested positive to ethanol and/or drugs. Ethanol alone was found in 772 (62%) of those testing positive and in conjunction with other drugs in a further 180 (14%). The high average blood alcohol concentration of 124 mg/100 ml (median 119 mg/100 ml) suggests that the complainants had consumed appreciable quantities of alcohol, especially if a back extrapolation is made. Cannabis was the commonest illicit drug identified, followed by amphetamine and amphetamine-like drugs. Gamma-hydroxybutyrate was identified in only one blood sample, whereas flunitrazepam was found in seven cases and its metabolite 7-amino flunitrazepam in another six cases. The authors caution that interpreting the analytical results in terms of voluntary vs. surreptitious administration of drugs is fraught with difficulties.